

# Quantifiable Objective Refinement

Weeki Wachee



Madison Trowbridge, Ph.D.

Springs Scientist

Natural Systems and Restoration

# SWIM Plans

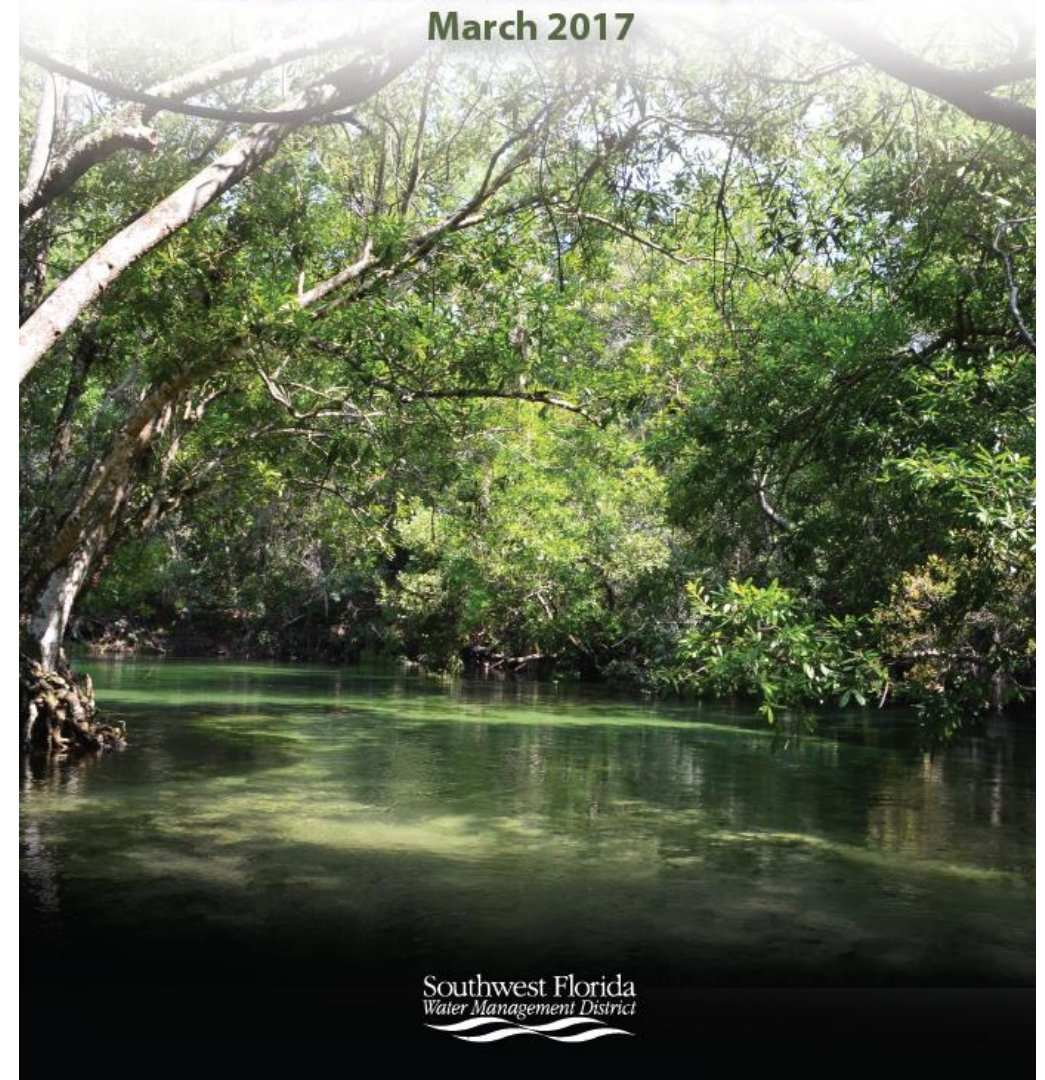
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- Surface Water Improvement & Management (SWIM) Plans
  - Issues & Drivers
  - Management actions
    - Quantifiable objectives
  - Projects and Initiatives

## Weeki Wachee River Surface Water Improvement and Management (SWIM) Plan

A Comprehensive Conservation and Management Plan

March 2017





# Quantifiable Objectives

WATER QUALITY



WATER QUANTITY



NATURAL SYSTEMS



# Quantifiable Objectives Refinements

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- **Refinements**
  - Rainbow – approved July 2021
  - Crystal River/Kings Bay – approved March 2022
  - **Weeki Wachee – in progress**
  - Chassahowitzka – upcoming (tentative January 2023)
  - Homosassa – upcoming (tentative July 2023)
- **Public workshop**
- **District's Governing Board**

# WW: Current Quantifiable Objectives

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Water Quality	Target
Water clarity – river average	>50 feet <sup>1</sup>
Water clarity – near the headspring	>120 feet <sup>1</sup>
Nitrate concentration in the river	<0.20 mg/L <sup>2</sup>
Water Quantity	
Minimum flow for the river system	>90% natural flow <sup>3</sup>
Natural Systems	
Coverage of desirable submerged aquatic vegetation in the river	>40% <sup>4</sup>
Coverage of invasive aquatic vegetation (including filamentous algae) in the river	<10% <sup>4</sup>

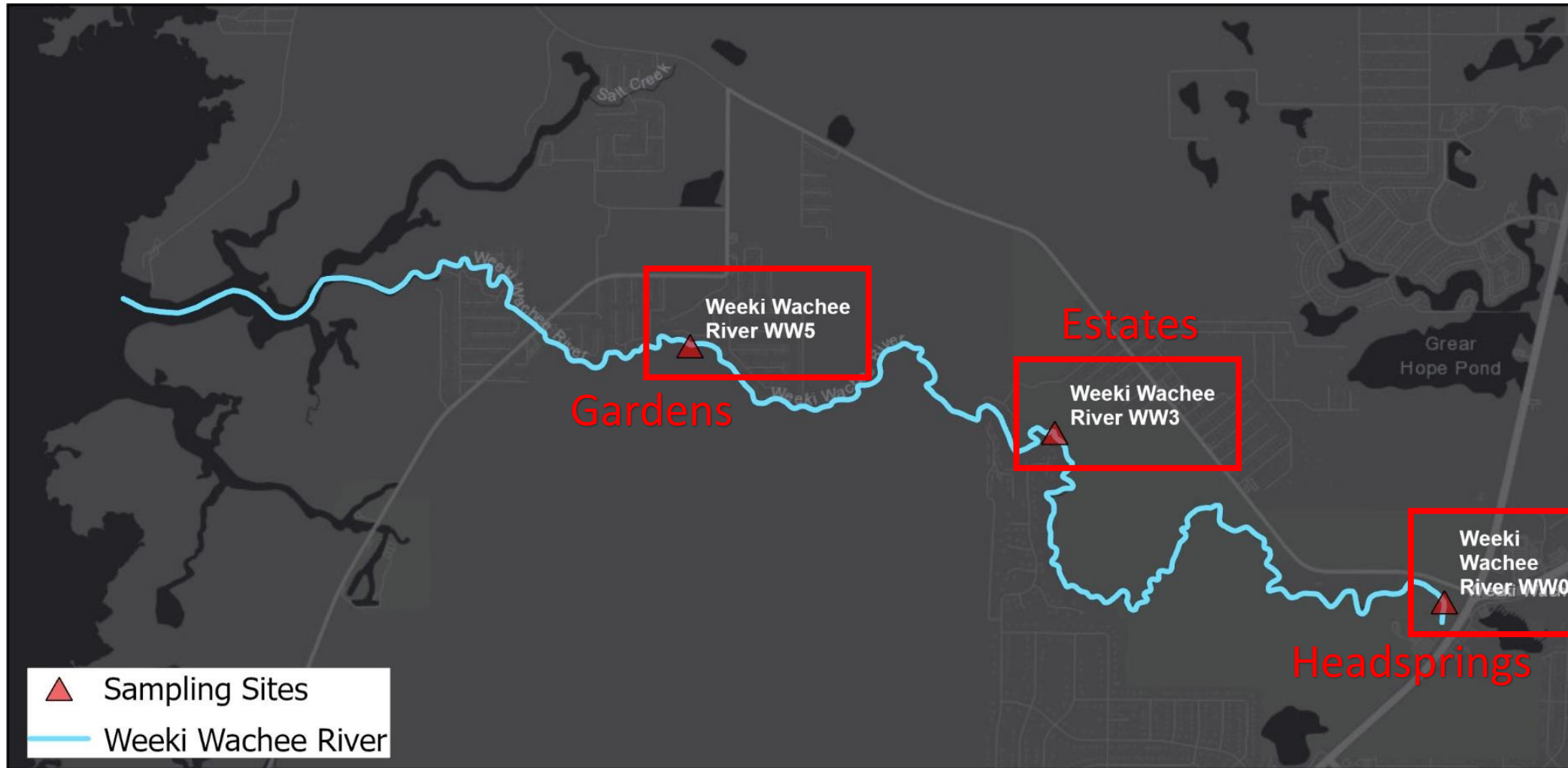
# WW: Refinement Discussion

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- **Define quantifiable objectives as different river portions**
  - Water clarity – Headsprings, Estates, Gardens
  - Natural systems – upper and lower
- **Define water clarity as indicator**



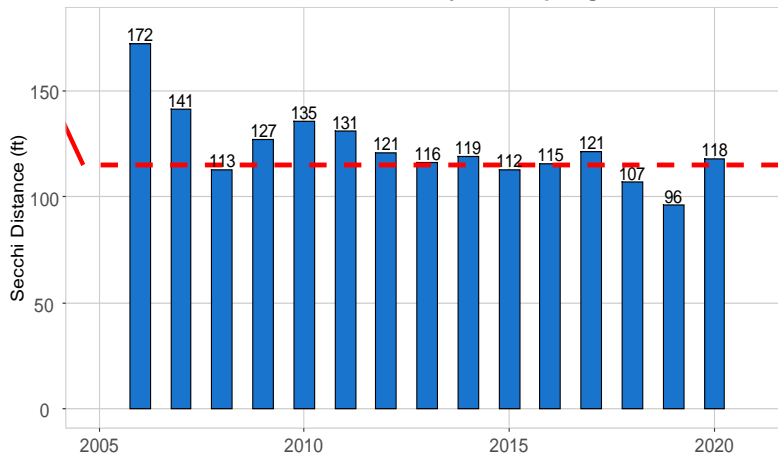
# WW: Refinement Discussion



# WW: Refinement Discussion

## HEADSPRING

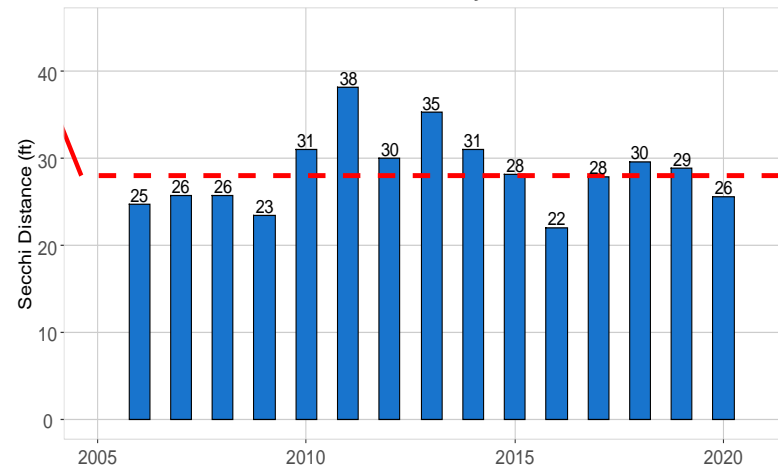
Mean Water Clarity: Headspring



**AVG: 115 ft**

## ESTATES

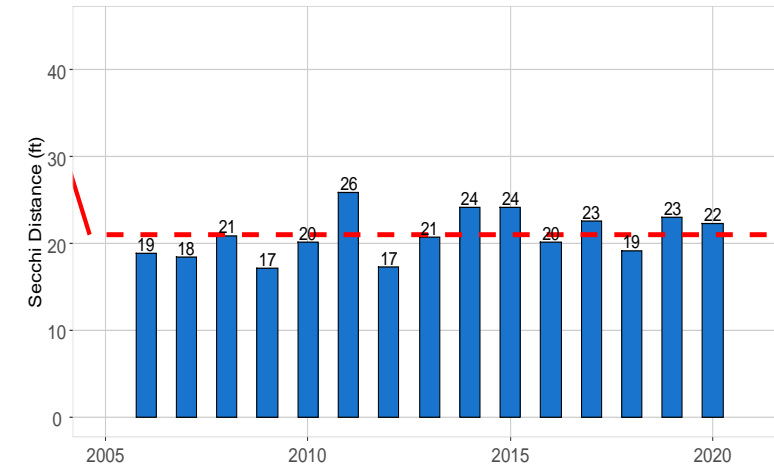
Mean Water Clarity: Estates



**AVG: 28 ft**

## GARDENS

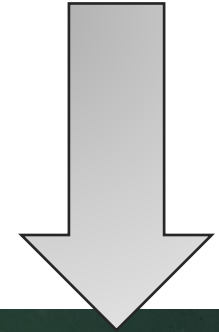
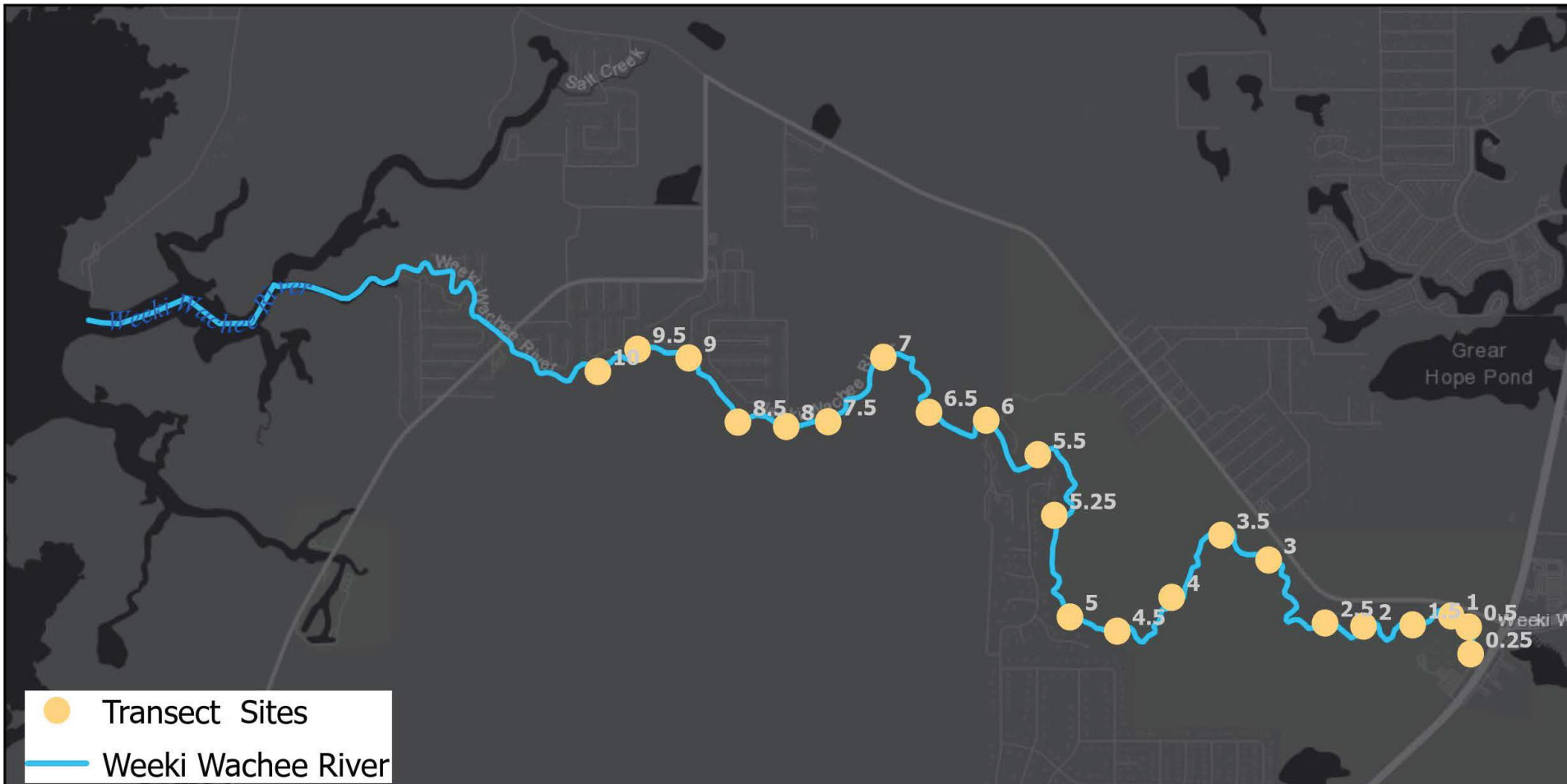
Mean Water Clarity: Gardens



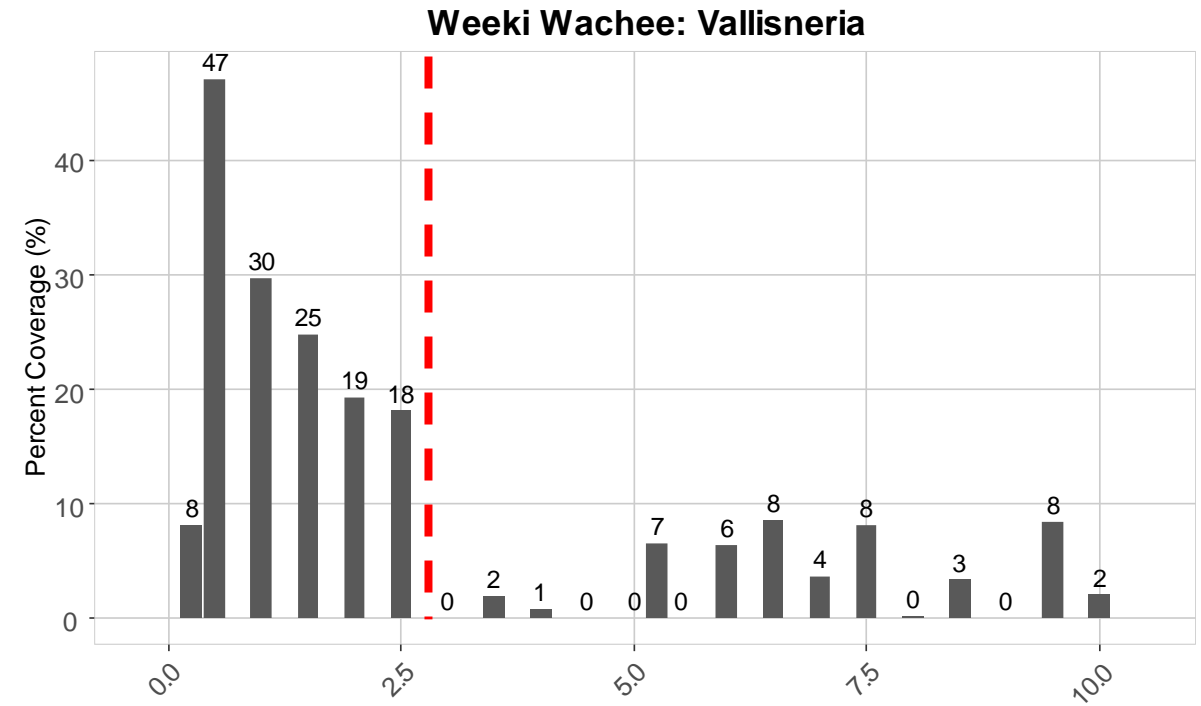
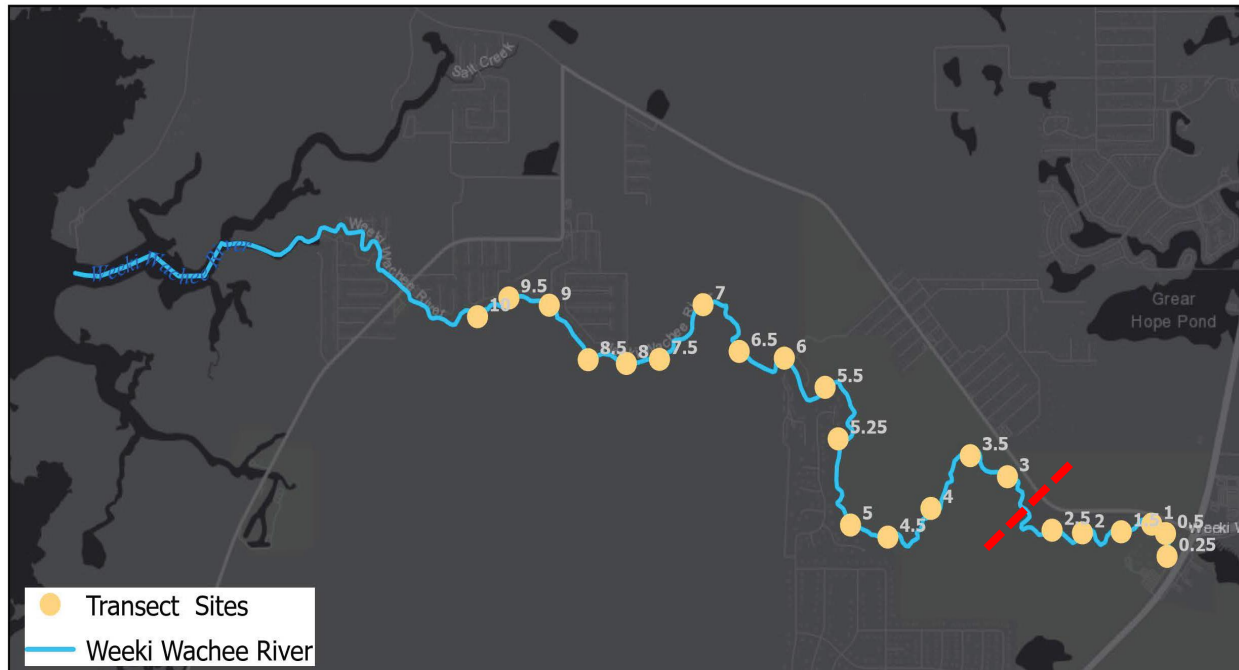
**AVG: 21 ft**



# WW: Refinement Discussion



# WW: Refinement Discussion



# WW: Refinement Discussion

Water Quality	Target
Water clarity – river average	>50 feet <sup>1</sup>
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Nitrate concentration in the river	<0.20 mg/L <sup>2</sup>
Water Quantity	
Minimum flow for the river system	>90% natural flow <sup>3</sup>
Natural Systems	
Coverage of desirable submerged aquatic vegetation in the river	>40% <sup>4</sup>
Coverage of invasive aquatic vegetation (including filamentous algae) in the river	<10% <sup>4</sup>

## Indicators

Water clarity	Threshold
Near the headspring	115 ft
Near the Estates	28 ft
Near the Gardens	21 ft

## Quantifiable Objectives

Water quality	Target
Nitrate concentration in the springs	< 0.20 mg/L
Water quantity	
Minimum flows for the springs and river	> 90% natural flow
Natural systems	
Coverage of desirable submerged aquatic vegetation in the upper and lower portions of the river	> 40%
Coverage of invasive aquatic vegetation (including filamentous algae) in the upper and lower portions of the river river	< 10%

# Action Item

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**Approve refinements to the quantifiable objectives.**

- **Redefine water clarity as an indicator**
- **Define water clarity evaluated as Headspring, Estates, Gardens**
- **Define natural systems evaluated as upper and lower portions**



# Questions?

**Madison Trowbridge, Ph.D.**

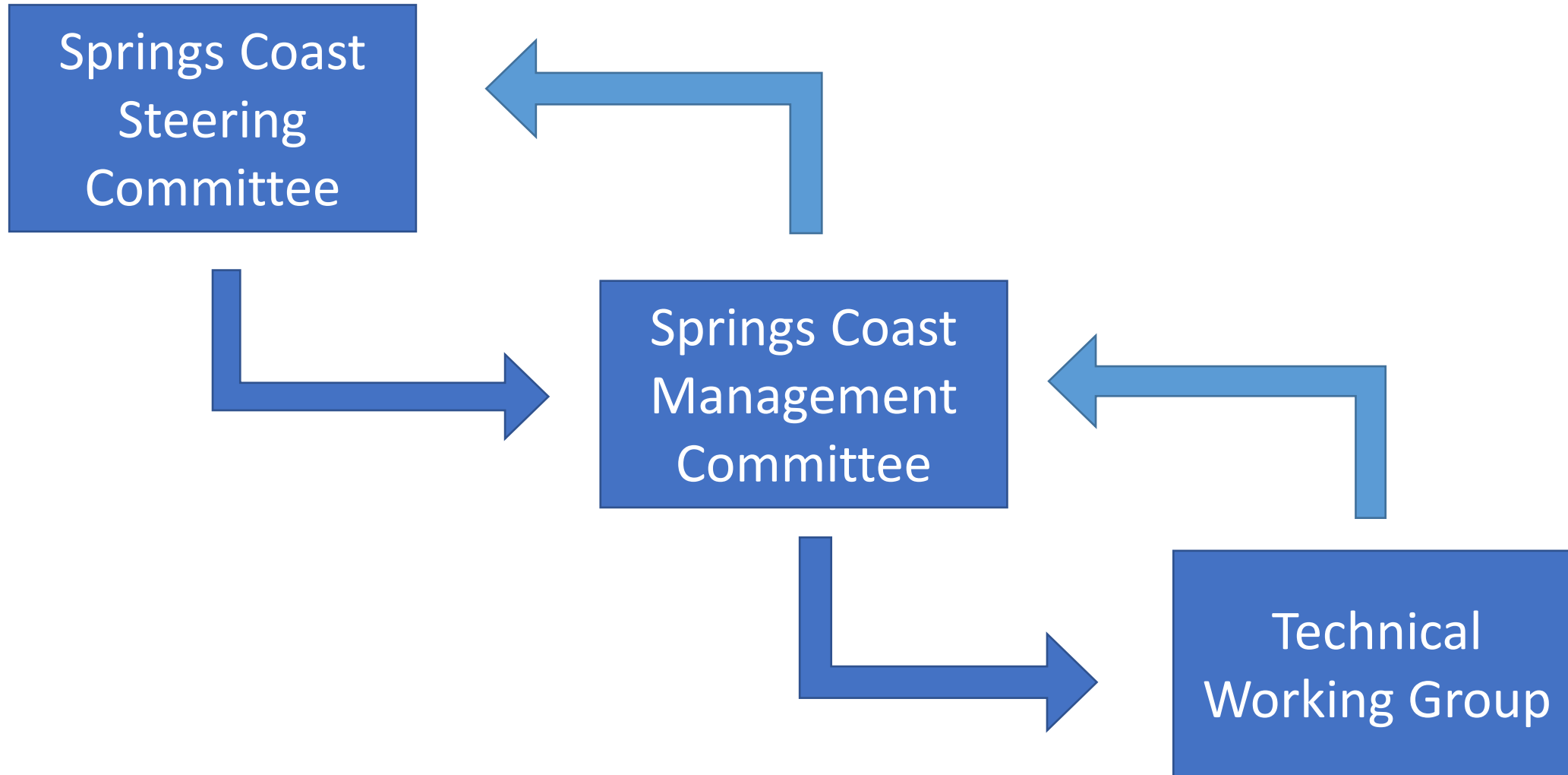
Surface Water Improvement and Management  
Natural Systems and Restoration Bureau

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# Quantifiable Objectives Refinements

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# Weeki Wachee QO: Current

	Water Quality	Target
👍	Water clarity – river average	>50 feet <sup>1</sup>
👍	Water clarity – near the headspring	>120 feet <sup>1</sup>
👎	Nitrate concentration in the river	<0.20 mg/L <sup>2</sup>
	Water Quantity	
👍	Minimum flow for the river system	>90% natural flow <sup>3</sup>
	Natural Systems	
👎	Coverage of desirable submerged aquatic vegetation in the river	>40% <sup>4</sup>
👍	Coverage of invasive aquatic vegetation (including filamentous algae) in the river	<10% <sup>4</sup>

# Q0: Weeki Wachee TWG Discussions

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## Indicators

Water clarity	Threshold
Near the headspring	115 ft
Near the Estates	28 ft
Near the Gardens	21 ft

## Quantifiable Objectives

Water quality	Target
Nitrate concentration in the springs	< 0.20 mg/L
Water quantity	
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# Q0: Weeki Wachee TWG –water clarity

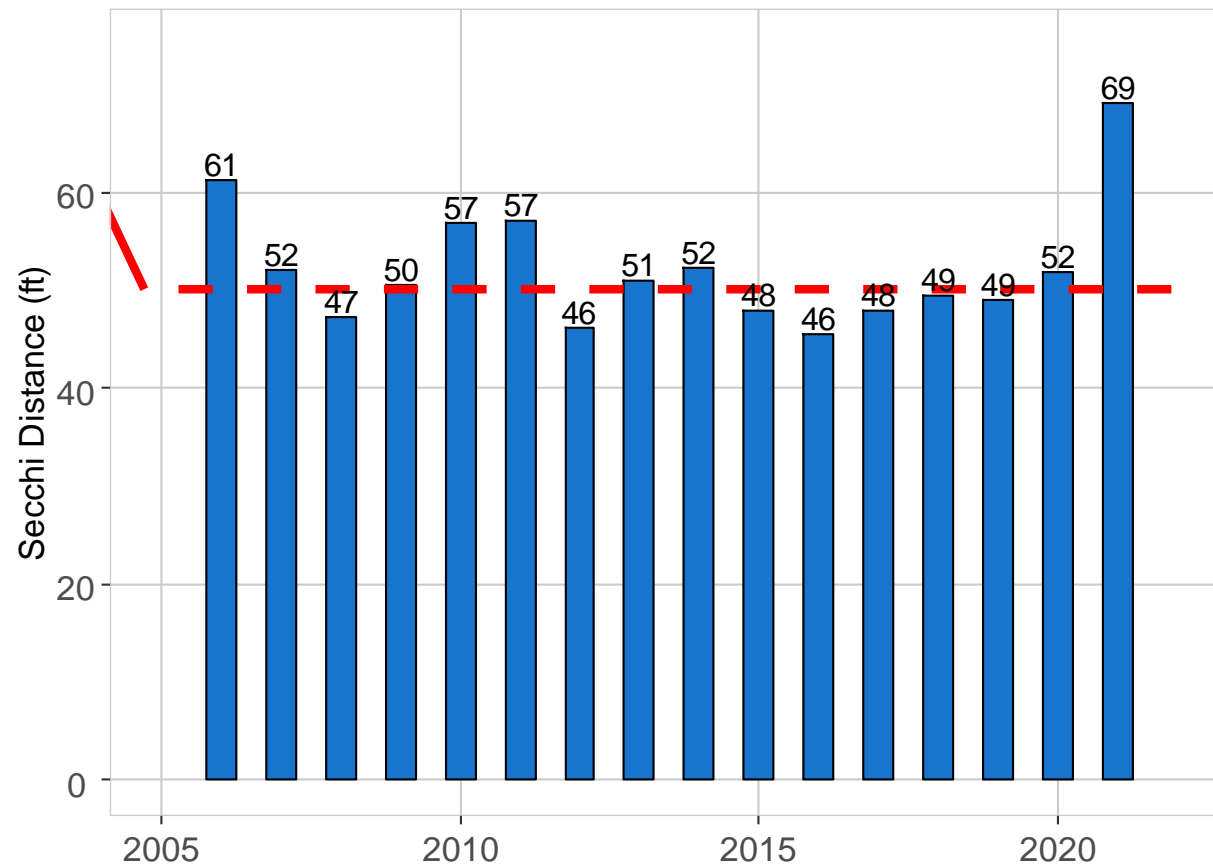


# Weeki Wachee Q0: Water Quality

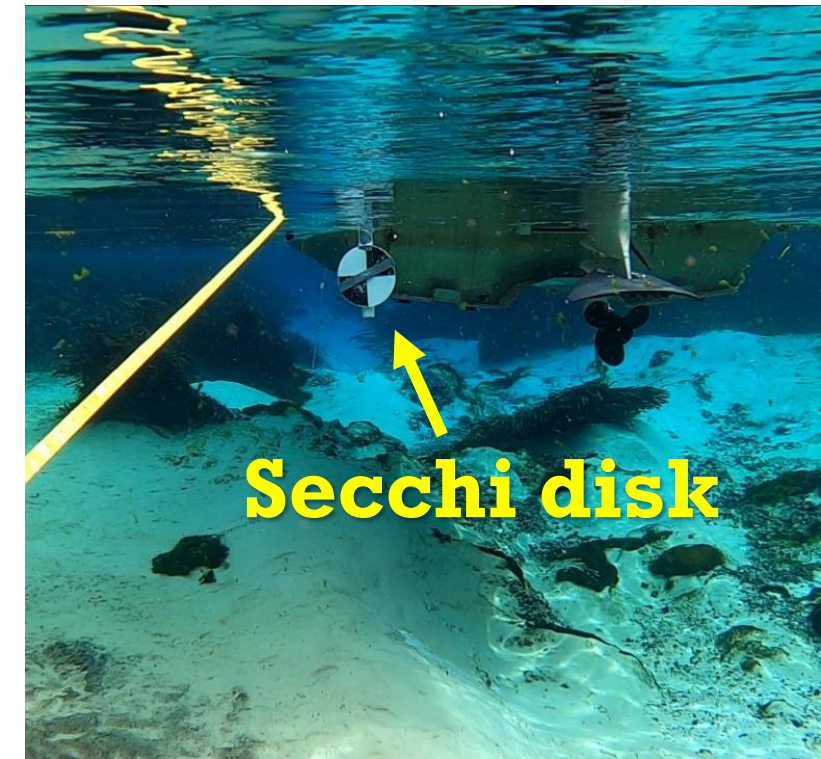


# Weeki Wachee QO: Water Quality

Mean Water Clarity: River Average



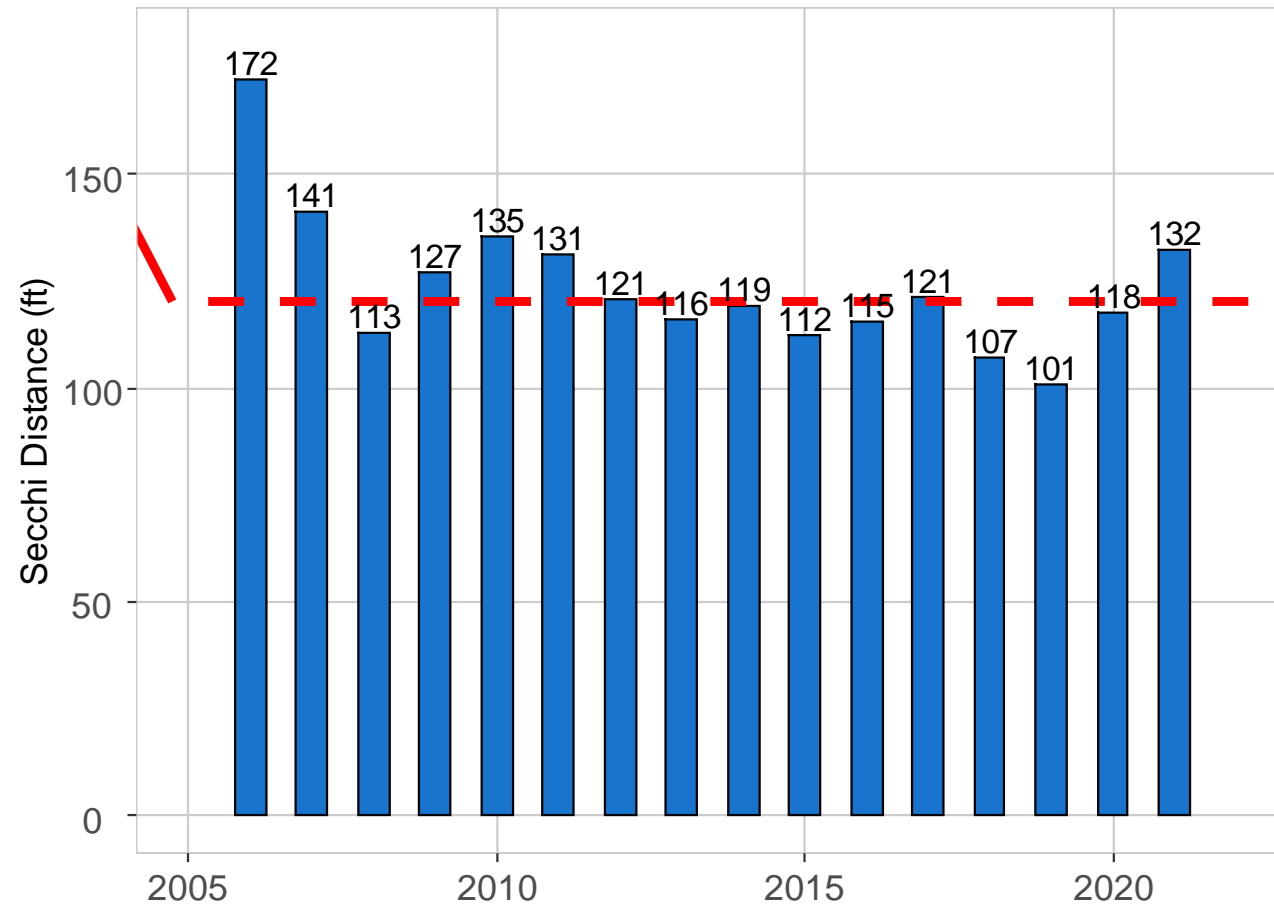
**SWIM  
plan  
objective  
> 50 Feet**



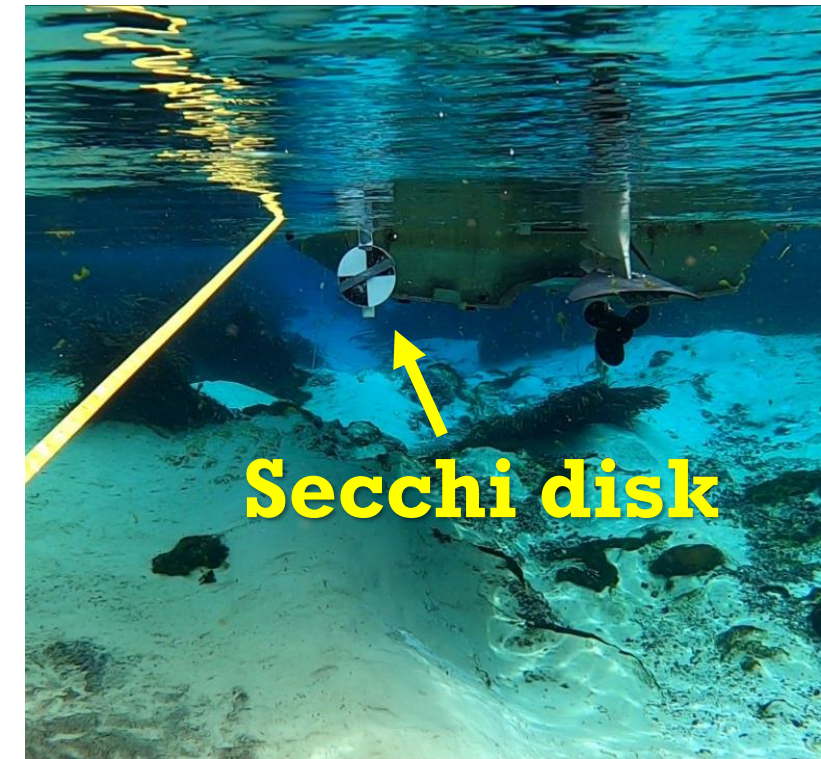


# Weeki Wachee QO: Water Quality

Mean Water Clarity: Headspring

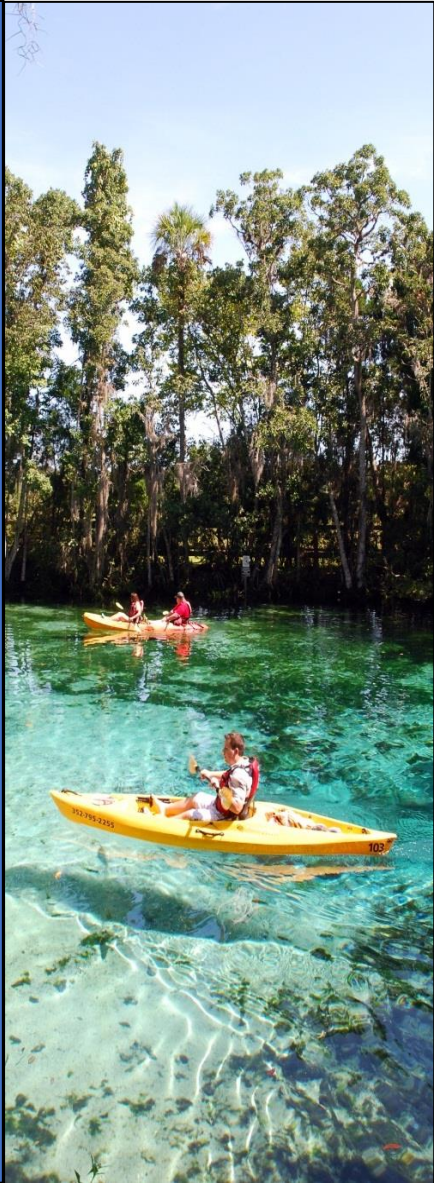


SWIM  
plan  
objective  
> 120 Feet

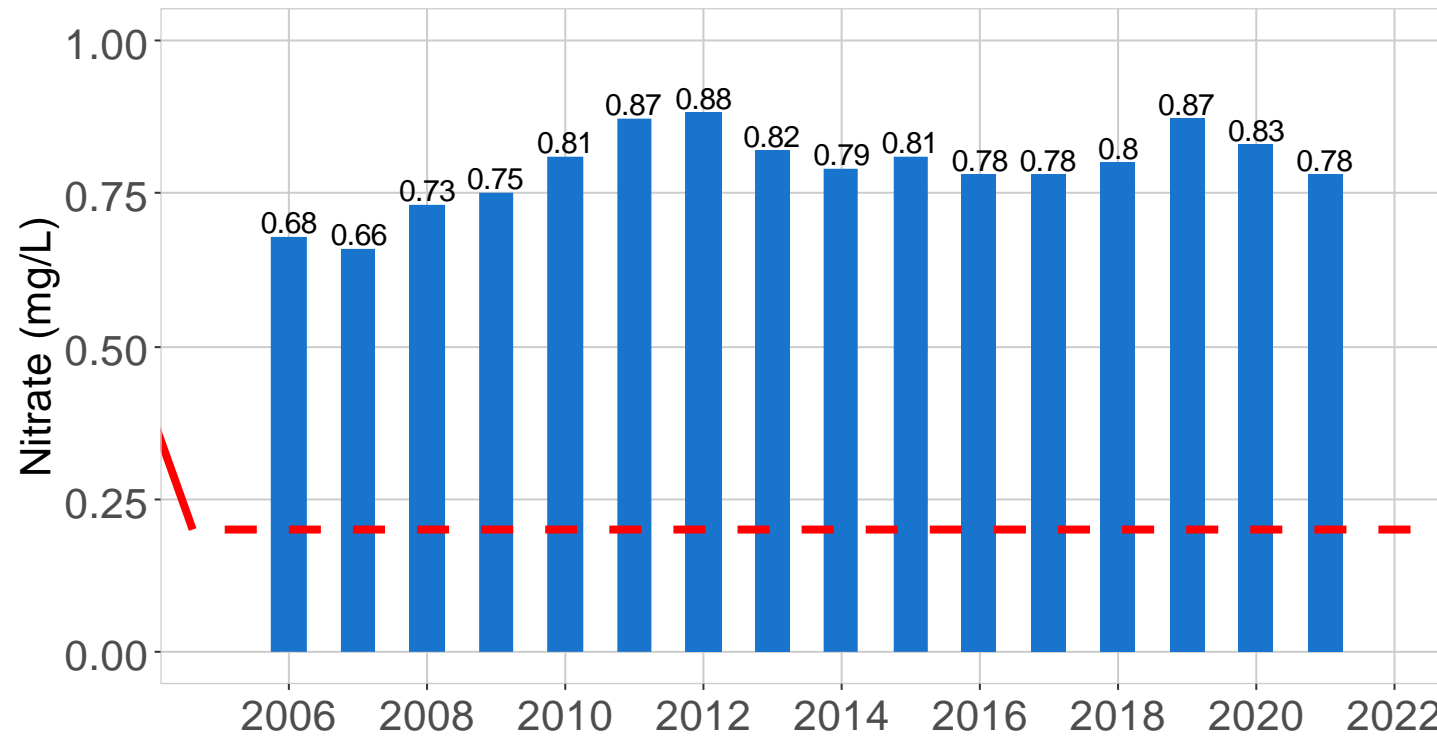




# Weeki Wachee QO: Water Quality



Nitrate Concentration: Weeki Wachee River



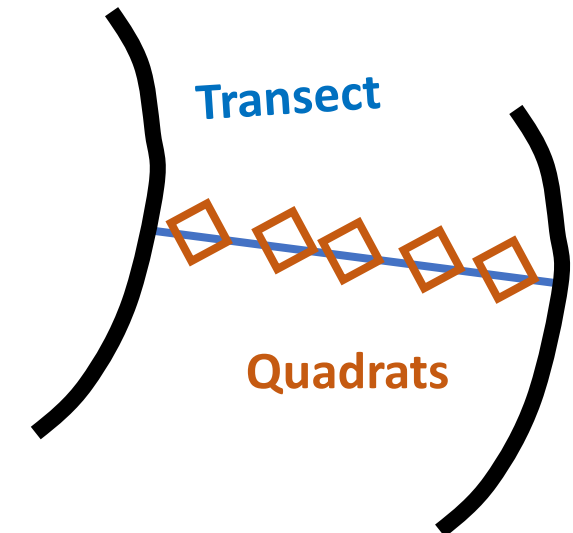
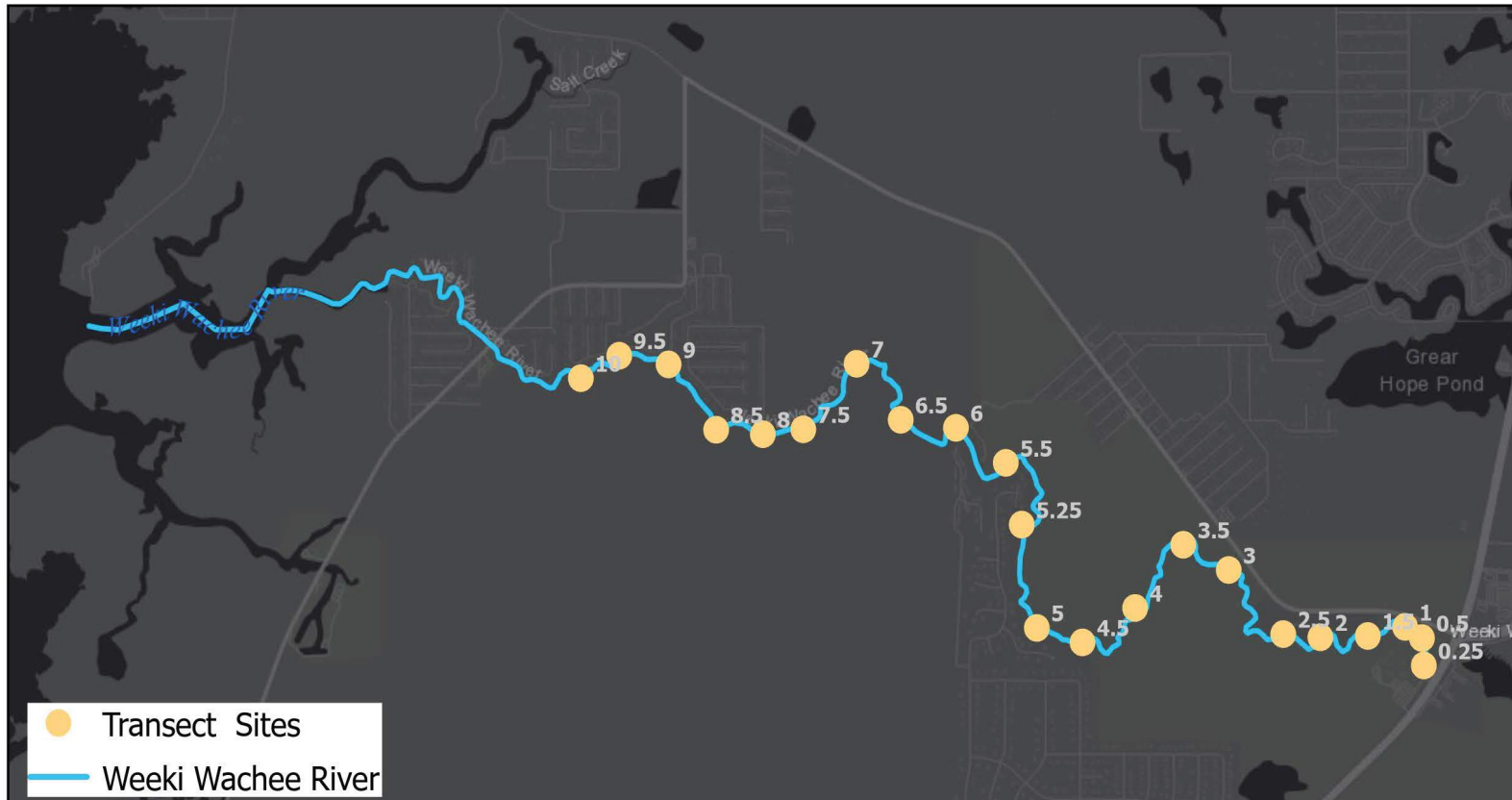
SWIM plan  
objective  
< 0.20 mg/L

# Weeki Wachee Q0: Water Quantity



- Minimum Flow for the River  
>90% of Natural Flow
- **MFL Status: 93% Natural Flow**

# Weeki Wachee Q0: Natural Systems





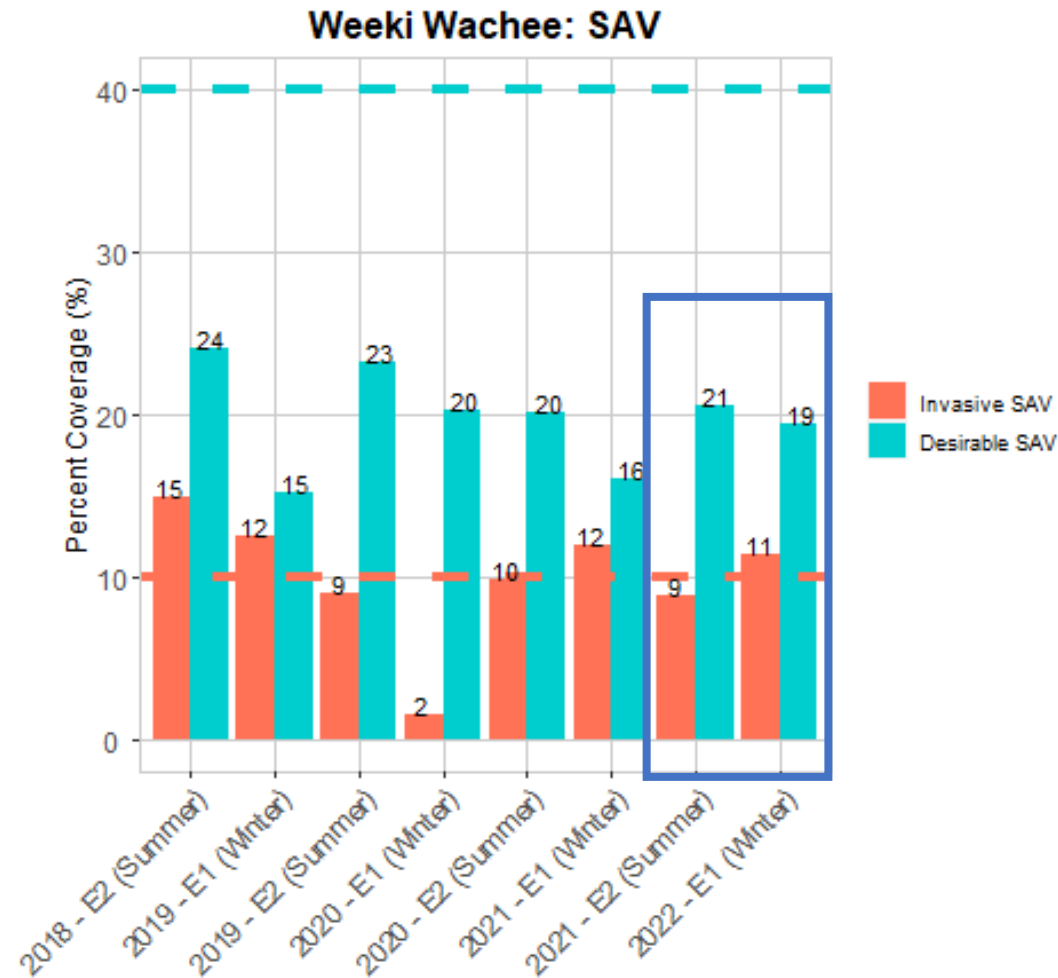
# Weeki Wachee Q0: Natural Systems

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# Weeki Wachee Q0: Natural Systems



# SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

